WHAT IS CLAIMED IS:

1. An optical switch apparatus comprising:

at least two independent control elements for controlling optical loss in a portion of said switch apparatus, said at least two independent control elements located in an optical path of said optical switch apparatus;

an arrangement of said at least two independent control elements such that minimum optical loss through the portion of said switch apparatus in which they are located may be obtained;

wherein said at least two independent control elements may be independently tuned to effect said control of optical loss, including tuned to said arrangement for obtaining minimum optical loss; and

wherein at least one of said at least two control elements is selectively detuned from said arrangement for obtaining minimum optical loss such that the resulting optical loss is substantially constant regardless of application of typical mechanical vibration to the optical switch apparatus.

2. The apparatus of claim 1, wherein each of said at least two independent control elements comprise mirrors and mirror positioning devices.

3. The apparatus of claim 2, wherein said detuning comprises the positioning of at least one of said mirrors at a position other than a position of minimum optical loss.

4. The apparatus of claim 3, wherein said detuning comprises the positioning of both of said mirrors at a position other than a position corresponding to minimum optical loss.

5. The apparatus of claim 1, wherein the resulting optical loss is substantially constant given application of mechanical vibration of up to 1.5G over a varying range of up to 100 Hz vibration frequency.

6. The apparatus of claim 2, wherein a first of said at least two independent control elements comprises an input mirror and a second of said at least two independent control elements comprises an output mirror.

7. The apparatus of claim 6, wherein each of said input mirror and said output mirror are mounted for rotation in two axes.

8. The apparatus of claim 7, wherein at least one of said input mirror and said output mirror are detuned in two axes from said arrangement of minimum optical loss.

9. The apparatus of claim 2 further comprising at least one optical tap located in said optical path for measuring optical power.

10. The apparatus of claim 9, comprising two optical taps, a first of said optical taps located in said optical path before a first of said at least two independent control elements, and a second of said optical taps located in said optical path after said first of said at least two independent control elements but before said second of said at least two independent control elements, connected in a feedback circuit with at least one of said mirror positioning devices such that mirror position may be controlled to obtain desired detuning.

11. The apparatus of claim 2, wherein each of said mirrors is suspended by mirror torsion elements permitting rotation of said mirror in a first plane, said torsion elements mechanically connected to a frame, and further wherein said frame is suspended by frame torsion elements permitting rotation of said frame in a second plane perpendicular to the rotation of said first plane.

12. The apparatus of claim 11, wherein said arrangement of minimum optical loss comprises a position of said mirrors and a position of said frames corresponding to minimum optical loss, and further wherein said detuning comprises a position of at least one of said mirrors away from said position of said mirror corresponding to minimum optical loss and maintaining said frames in said position of said frames corresponding to minimum optical loss.

13. The apparatus of claim 1, wherein said at least two independent control elements are located in a first optical path of said optical switch apparatus, and further comprising:

an additional at least two independent control elements, located in a second optical path of said optical switch apparatus;

an arrangement of said additional at least two independent control elements such that minimum optical loss through the portion of said switch apparatus in which they are located may be obtained;

wherein said additional at least two independent control elements may be independently tuned to effect said control of optical loss, including tuned to said arrangement for obtaining minimum optical loss; and

wherein at least one of said additional at least two control elements is selectively detuned from said arrangement for obtaining minimum optical loss such that the resulting optical loss is substantially constant regardless of application of typical mechanical vibration to the optical switch apparatus.

14. The apparatus of claim 13, wherein optical loss provided by said arrangement of said at least two independent control elements and optical loss provided by said arrangement of said additional at least two independent control elements are substantially equal.

15. The apparatus of claim 13, wherein optical loss provided by said arrangement of said at least two independent control elements and optical loss provided by said arrangement of said additional at least two independent control elements are independently selected to provide a predetermined optical power output for each of said first and second optical paths, respectively.

16. A method of increasing the loss of an optical switch without substantially increasing the effect of vibration on the switch, comprising the steps of:

providing at least two independent control elements for controlling optical loss in a portion of said switch apparatus, said at least two independent control elements located in an optical path of said optical switch apparatus;

arranging said at least two independent control elements such that minimum optical loss through the portion of said switch apparatus in which they are located may be obtained;

independently tuning said at least two independent control elements to effect said control of optical loss to thereby obtain minimum optical loss; and

selectively detuning at least one of said at least two control elements from said arrangement of minimum optical loss such that the resulting optical loss is substantially constant regardless of application of typical mechanical vibration to the optical switch apparatus.

17. The method of claim 16, wherein said at least two independent control elements are mirrors and mirror positioning devices, and further wherein said detuning comprises the positioning of at least one of said mirrors at a position other than a position of minimum optical loss.

18. The method of claim 17, wherein each of said at least two mirrors are mounted for rotation in two axes, and further wherein at least one of said two mirrors are detuned in two axes from said arrangement of minimum optical loss.

19. The method of claim 17, wherein each of said mirrors is suspended by mirror torsion elements permitting rotation of said mirror in a first plane, said torsion elements mechanically connected to a frame, and further:

wherein said frame is suspended by frame torsion elements permitting rotation of said frame in a second plane perpendicular to the rotation of said first plane;

wherein said arrangement of minimum optical loss comprises a position of said mirrors and a position of said frames corresponding to minimum optical loss; and

wherein said detuning comprises positioning at least one of said mirrors away from said position of said mirror corresponding to minimum optical loss and maintaining said frames in said position of said frames corresponding to minimum optical loss.

20. The method of claim 16, further comprising the steps of:

providing an additional at least two independent control elements for controlling optical loss in a portion of said switch apparatus, said at least two independent control elements

located in a first optical path of said optical switch apparatus and said additional at least two independent control elements located in a second optical path of said optical switch apparatus;

arranging said additional at least two independent control elements such that minimum optical loss through the portion of said switch apparatus in which they are located may be obtained;

independently tuning said additional at least two independent control elements to effect said control of optical loss to thereby obtain minimum optical loss;

selectively detuning at least one of said additional at least two control elements from said arrangement of minimum optical loss such that the resulting optical loss is substantially constant regardless of application of typical mechanical vibration to the optical switch apparatus; and

wherein optical loss provided by said arrangement of said at least two independent control elements and optical loss provided by said arrangement of said additional at least two independent control elements are substantially equal.

21. The method of claim 16, further comprising the steps of:

providing an additional at least two independent control elements for controlling optical loss in a portion of said switch apparatus, said at least two independent control elements located in a first optical path of said optical switch apparatus and said additional at least two independent control elements located in a second optical path of said optical switch apparatus;

arranging said additional at least two independent control elements such that minimum optical loss through the portion of said switch apparatus in which they are located may be obtained;

independently tuning said additional at least two independent control elements to effect said control of optical loss to thereby obtain minimum optical loss;

selectively detuning at least one of said additional at least two control elements from said arrangement of minimum optical loss such that the resulting optical loss is substantially constant regardless of application of typical mechanical vibration to the optical switch apparatus; and

wherein optical loss provided by said arrangement of said at least two independent control elements and optical loss provided by said arrangement of said additional

at least two independent control elements are independently selected to provide a predetermined optical power output for each of said first and second optical paths, respectively.